

JUL 14 2008

Application Serial No. 10/607,915
Reply to Office Action of January 14, 2008

PATENT
Docket: CU-6508

REMARKS/ARGUMENTS

In the Office Action dated January 14, 2008, the Examiner states that Claims 12, 17 and 18 are pending and Claims 12, 17 and 18 are rejected.

Applicant thanks the Examiner for pointing out typographical errors in the claims previously filed in this application. In response to paragraph 2 of the Action, Claim 18 is amended so that "farned" again reads "formed". In response to paragraph 4 of the Action, "A" is amended to read "Å" in claims 12 and 18. No new matter is believed to be added by these amendments.

In response to paragraphs 6 and 7 of the Action, Applicant respectfully submits that claims 12 and 17-18 are not obvious and are patentable over Samecki (US 2003/0089252) in view of Towns et al (US 6,153,711), Park et al. (US 5,053,298) and Roitman (US 5,972,419). Applicant respectfully directs the Examiner to the Summary of the Interview mentioned at the beginning of this Amendment, and filed the same date.

In the Action, the Examiner indicates that Towns discloses ink viscosities in a range of 1 cP to 200 cP (column 2 lines 56-67) and that the selection of something known for its suitability for its intended use may support a prima facie case of obviousness. The Examiner therefore states that the present invention is obvious in view of Samecki, with Towns' disclosure of 1-200 cp viscosity in some coating materials. The Examiner also states that Towns teaches that a viscosity-modified solution can be deposited by "the desired coating technique (e.g., spin coating, blade coating or ink jet printing)" and that Towns does not limit the "desired coating techniques" but rather teaches that reverse roll coating, meniscus coating, and coating/transfer coating methods are suitable equivalent coating techniques for solution-based processing.

In response, Applicant first notes that the present invention is directed in part to a method for manufacturing an electroluminescent element comprising forming a light emitting layer in a film thickness of 100 – 2000 Angstroms using an intaglio where the viscosity of the solution for forming the layer is 0.5 – 500 cP, the depth of a groove/cell of the intaglio is 500 Angstroms – 1 mm, and a contact angle of the solution on a base material where the electroluminescent layer is formed is 20° or less.

Paragraphs 9, 11 and 12 of the application as published emphasize some of

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the important aspects of intaglio printing and the viscosity of the solution of the present invention. Paragraph 52 of the present application further emphasizes the need for evenness and thinning of the layer of the present invention; paragraph 53 discloses the importance of the claimed viscosity range of 0.5 – 500 cP, for instance in that a viscosity less than 0.5 cP results in a layer that is not even, and a viscosity greater than 500 cP is hard to spread and does not provide for even wetting. See also Examples 1-3 of the application, illustrating embodiments of the present invention where the solution forming the light emitting layer has a viscosity of 0.5, 250 or 500 cP, and Comparative Examples 4-5, disclosing that solutions having a viscosity of 0.4 cP and 550 cP failed to obtain an even light emitting layer film.

A solution having a viscosity of 0.5 cP to 500 cP can be used for intaglio printing according to the present invention at least in part because spreading of the ink can be controlled by controlling the wettability (or contact angle) between the ink and the base material. In other words, the viscosity of the present invention works with a specific method having an intaglio with specific dimensions and with the solution to be applied at a specific angle.

Towns does not disclose a coating solution having a viscosity of 0.5-500 cP for intaglio printing, much less intaglio printing according to the present invention. Towns discloses reverse roll coating, meniscus coating, and coating/transfer coating methods together with spin coating, blade-coating and ink-jet printing (col. 1 lines 32-34) as examples of "standard solution-based processing techniques", and explains for instance that it is difficult to coat a conventional high viscosity ink (for example 400 cps) at a desired thickness especially with low-viscosity methods such as ink jet printing (col. 1 lines 52-57).

Towns does not teach "reverse roll coating, meniscus coating, and coating/transfer coating methods" as examples for printing methods used for the ink having viscosity range "1 cP to 200 cP". Rather, Towns generally teaches adjusting the viscosity of a solution by applying a shear to reactants of a polymerization reaction, and teaches that different viscosities will be useful for different methods. See for instance Towns column 5 lines 27-42 and column 7 lines 19-22, teaching that viscosities of solutions for spin coating may be from 100-700 cps, ink jet printing is preferably less than 5 cps (more preferably 3.75 cps), and blade coating is more than 200 cps. In view of the disclosure at column 2 lines 56-67 of 1-200 cP as well

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as other disclosures by Towns, one skilled in the art would not be taught the viscosity of the present invention for intaglio methods by Towns, but rather would be taught away from the present invention by Towns, for instance by being taught different specific viscosity ranges for different methods.

At the time of Towns' invention, it was common knowledge that if low viscosity ink such as "1 cP to 200 cP" was used in intaglio printing, spreading of the ink could not be controlled so that the desired pattern could not be obtained. In the present invention, low viscosity ink such as 0.5-500 cP can be used for the intaglio printing because spreading of the ink can be controlled by controlling the wettability (or contact angle) between the ink and the base material.

Applicant respectfully submits that Towns does not disclose the viscosity range of "1 cP to 200 cP" for use in intaglio printing, and that Towns rather teaches away from "reverse roll coating, meniscus coating, and coating/transfer coating methods" from suitable methods using ink having a viscosity range of "1 cP to 200 cP".

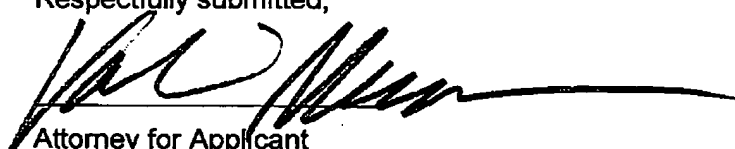
At least for the foregoing reasons, Applicant respectfully submits that the present invention is not rendered obvious by combining Towns and the other cited references, and respectfully requests that the Examiner withdraw the present rejection.

Applicant also respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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Date


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